

ABSTRACT OF THE DISCLOSURE

Embodiments of the invention provide an IGCC which achieves improved plant thermal efficiency by using a cooling steam supply system that cools the high-temperature sections of the gas turbine 34. Embodiments of the invention further provide an IGCC in 5 which the cooling steam recovery system recovers steam after cooling the gas-turbine high-temperature section and makes practical re-use of the energy and substances within the system. Therefore, embodiments of the invention can reduce or eliminate the degradation of certain equipment by cooling the high-temperature sections. Methods are provided for increasing the thermal efficiency of an IGCC.

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